

SKULL LAB - INCLUDING FEEDING AND MOVEMENT NAME:

Station 1: Feeding in Turtles

A. One of the preserved turtle specimens in front of you is an omnivore, while the other is mainly a carnivore.

i. Which is which?

ii. How can you tell? Provide sufficient detail here to justify here.

Which would use suction feeding and how can you tell?

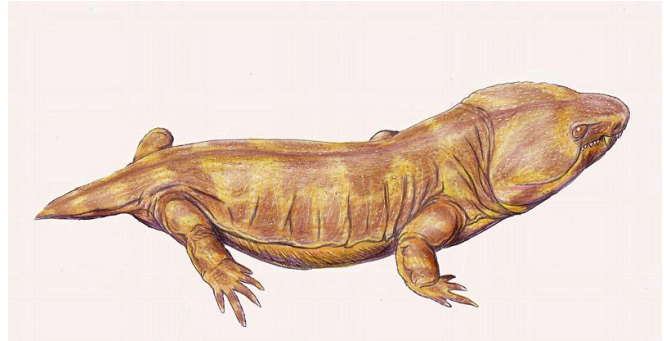
B. One of the skulls was just found on the road.

i. Do you think that the turtle is a carnivore, omnivore, or herbivore?

ii. Explain your reasoning.

Station 2: Fossils

At this station, there are two fossil skulls from the early Permian (~280 million years ago). One is a stem reptile, while the other is a stem amphibian. Which is which? How do you know?

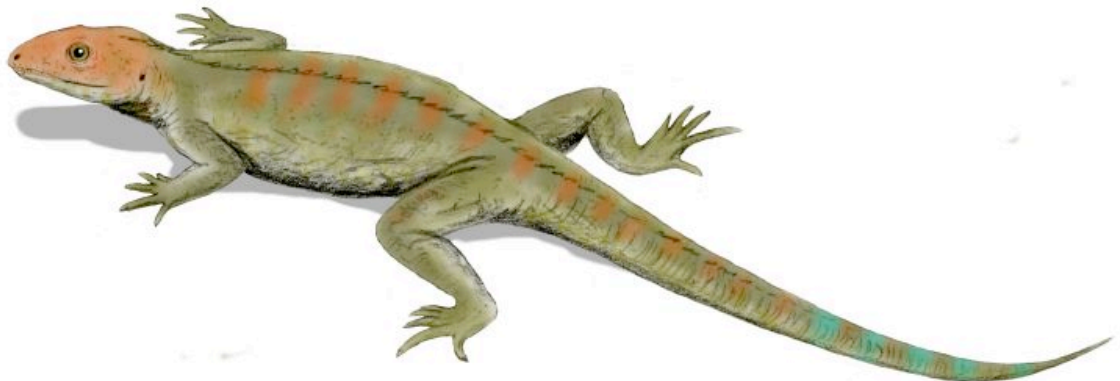


Pantylus, a lepospondyl.



Eocaptorhinus, an anapsid

The early reptile *Hylonomus*



Station 3: Snake skulls

A. At this station there is a snake skull. Snakes have kinetic skulls, with multiple joints where the skull is articulated.

- i. Find three articulation points on the skulls of these snakes by drawing the anaconda skull and circle three articulation points. Describe what movements the skull can make that would be impossible without these points. Think about feeding
- ii. What are the consequences of this articulation for the snake? Think about this from three different angles: skull maneuverability, mass, and robustness. (increase or decrease)

B. Why does the anaconda not need large fangs? Explain constriction and the tradeoff with not having venom.

Station 4: Snake fangs and envenomation

Here are skulls from a few species of venomous snakes. Some of these snakes have hinged fangs, while others are fixed. Which are hinged and which are fixed?

Observe the fangs of these snakes. Which species is rear fanged?

What are some tradeoffs with having rear fanged vs front fanged?

Station 5: Herbivores

One of the skulls at this station is from an herbivorous lizard, while the other is primarily is a carnivore.

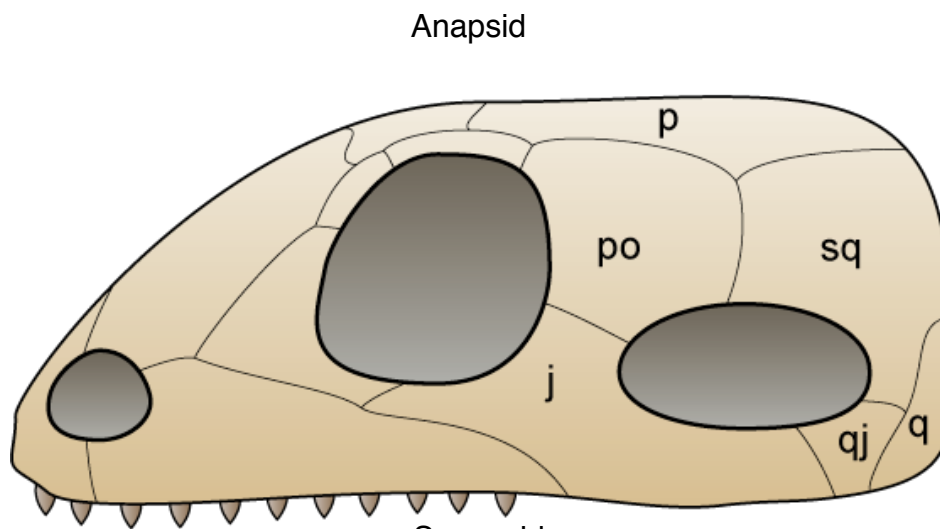
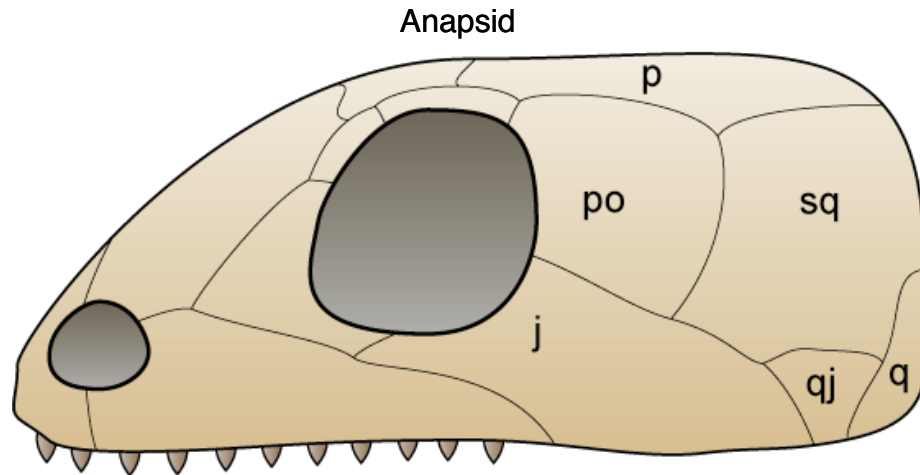
- A. Which do you think is which?

- B. Provide evidence to explain how you can tell.

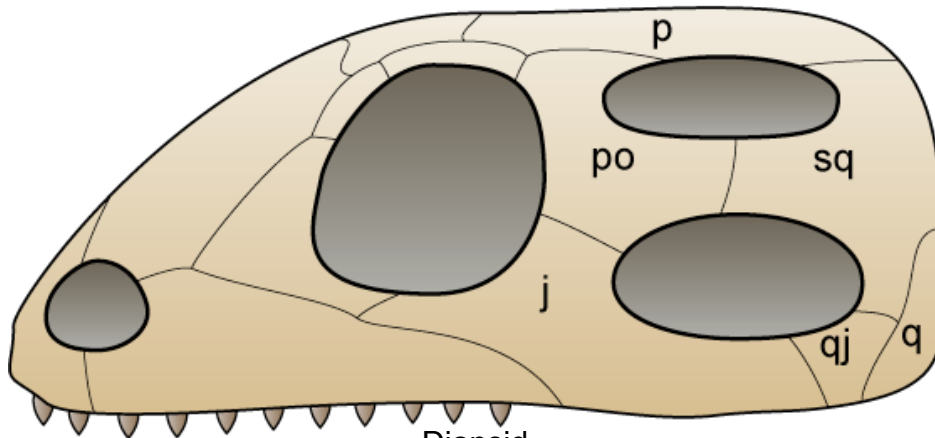
- C. What other traits do herbivorous lizards tend to share?

Station 6: Amniote skull types

- a. What is the phylogenetic distribution of these skulls? Which type has likely evolved more than once on the tree?



Synapsid



Diapsid

Station 7: Crocodylian skulls

List three things about crocodylian skulls that are different from skulls of other reptiles.

Station 8: Amphibian Teeth

A. Compare the teeth of these amphibians to the teeth of reptiles.

i. What do you observe?

iii. Can you observe any differences in tooth structure related to this type of tooth?

Last question – Pick a snake not represented today that has fangs.

First define fangs vs teeth. What method of delivery does this snake use to transfer venom from gland to prey? Do they have false venom glands or true venom glands? What type of venom do they produce? Are they rear or front fanged? Hinged or fixed? How toxic is the venom to humans?